REMARKS

Summary of the Office Action

Claims 1-17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Rho et al. (US 6,597,415) in view of Kim (US 6,862,052).

Claims 3-6 and 10-17 appear to stand rejected under 35 U.S.C. § 112, second paragraph.

The Drawings appear to be objected to.

Applicants' claim for priority is acknowledged.

Summary of the Response to the Office Action

Applicants have amended claim 3 in an attempt to improve form based upon the ambiguous comments made by the Examiner, as detailed below. Accordingly, Applicants respectfully assert that the amendments to claim 3 are unrelated to patentability. Thus, claims 1-17 are pending.

Request for Corrected Acknowledgement of Claim for Priority

The Office Action acknowledges Applicants' claim for priority by indicating that "...and the presently the earliest filling [sic] date available is December 20, 2002." However, on October 23, 2003, Applicants filed a Claim for Priority and a Certified Copy of Korean Patent Application No. 10-2002-0087480, which has a filing date of December 30, 2002. Accordingly, Applicants respectfully request the Examiner explain why a discrepancy exists between Applicants' claimed priority of December 30, 2002, and the Examiner's indication that "...and the presently the earliest filling [sic] date available is December 20, 2002."

Drawing Objections

The Office Action requires that "Figures 1 through 4 B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g)." Applicants respectfully disagree.

First, Applicants respectfully assert that the requirement to redesignate FIGs. 1-4B as "Prior Art" is unfounded and groundless. Nowhere in the Manual of Patent Examining Procedure (M.P.E.P.), the Code of Federal Regulations (C.F.R.), or the United States Code (U.S.C.) is there a requirement that an Applicant must designate drawing figures labeled "Related Art" as "Prior Art."

Second, M.P.E.P. § 608.02(g) clearly states:

> "Figures showing the prior art are usually unnecessary and should be canceled. *Ex parte Elliott*, 1904 C.D. 103, 109 O.G. 1337 (Comm'r Pat. 1904). However, where needed to understand applicant's invention, they may be retained if designated by a legend such as "Prior Art."

(Emphasis added). Accordingly, Applicants respectfully assert that M.P.E.P. § 608.02(g) clearly requires use of a legend, but does not require that the legend be "Prior Art." Thus, Applicants have designated FIGs. 1-4B as "Related Art" in order to differentiate FIGs. 1-4B from FIGs. 5-7.

Second, Applicants respectfully assert that no determination has been made as to whether or not FIGs. 1-4B are, in fact, "Prior Art." Specifically, Applicants respectfully assert that FIGs. 1-4B are related to Applicants' invention, as shown in FIGs. 5-7, but no determination has been made whether or not FIGs. 1-4B are prior art under the definition as set forth under current U.S. patent practice including the M.P.E.P., the C.F.R., or the U.S.C.

Accordingly, the requirement that Applicants must redesignate FIGs. 1-4B as "Prior Art" would grossly distort Applicants' present application, and thus, is not a requirement under M.P.E.P. § 608.02(g).

For at least the above reasons, Applicants respectfully assert that the requirement set forth by the Office Action is unfounded and groundless, and must be withdrawn.

All Claims Comply with 35 U.S.C. § 112

Claims 3-6 and 10-17 appear to stand rejected under 35 U.S.C. § 112, second paragraph, for allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Specifically, the Office Action indicates (middle portion at page 3) that:

> In claim 3 lines 11-13 recite, "..and to remain the photo resist layer of the first light transmission region "it is not understood what "remain refers to the photo resist or first Light .Trans . region . Applicants' intend to include/exclude by the recitation. (similar recitation in claim 10 also) ."

Apart from the obvious lack of proper punctuation in the actual body of the rejection, Applicants have *absolutely no idea* what the Examiner is attempting to communicate as being the actual language recited by claim 3 (and apparently claim 10) that is being cited as the grounds for rejecting claims 3 and 10 under 35 U.S.C. § 112, second paragraph.

In an attempt to advance prosecution of the present application, and without any admission that claims 3 and/or 10 include language that would render claims 3 and/or 10 indefinite under 35 U.S.C. § 112, second paragraph, Applicants have amended claims 3 and 10 to recite, in part:

> "...developing the photoresist layer to completely remove the photoresist layer corresponding to ~~of~~ the second light transmission region and to retain ~~remain~~ the photoresist layer corresponding to ~~of~~ the first light transmission region;..."

Accordingly, Applicants respectfully assert that if the above amendments to claims 3 and 10 are not sufficient to overcome Applicants' presumed grounds of rejection of claims 3 and 10 under 35 U.S.C. § 112, second paragraph, that the Examiner immediately contact Applicants' undersigned representative to better explain what specific language renders claims 3 and 10 indefinite under 35 U.S.C. § 112, second paragraph.

The Office Action continues (middle portion at page 3) by alleging that:

> Similarly claim 3 lines 14 to 19 recite, "developing the etching the organic passivation layer to remove a part of the organic passivation layer of the second light transmission region; removing the photoresist layer; and etching the organic passivation layer to remove a remaining organic passivation layer." it is not understood what Applicants' intend to include/exclude by the recitation. What is meant by 'developing the etching ' etc."

Again, Applicants have *absolutely no idea* what the Examiner is attempting to communicate as being the actual language recited by claim 3 that is being cited as the grounds for rejecting claim 3 under 35 U.S.C. § 112, second paragraph. For example, Applicants respectfully assert that claim 3 does not recite *anything* that includes "developing the etching." Accordingly, Applicants have absolutely no idea what language of claim 3 is alleged to render claim 3 indefinite under 35 U.S.C. § 112, second paragraph.

In another attempt to advance prosecution of the present application, and without any admission that claim 3 includes language that would render claim 3 indefinite under 35 U.S.C. § 112, second paragraph, Applicants have amended claim 3 to recite, in part:

"etching the organic passivation layer to remove a part of the organic passivation layer corresponding to ~~of~~ the second light transmission region;

removing the retained photoresist layer corresponding to the first light transmission region; and

etching the organic passivation layer to remove ~~a remaining~~ the organic passivation layer in the first and second light transmission regions."

Accordingly, Applicants respectfully assert that if the above amendments to claim 3 are not sufficient to overcome Applicants' presumed grounds of rejection of claim 3 under 35 U.S.C. § 112, second paragraph, that the Examiner immediately contact Applicants' undersigned representative to better explain what specific language renders claim 3 indefinite under 35 U.S.C. § 112, second paragraph.

The Office Action continues (bottom portion at page 3) by alleging that:

> Claims 6 and 14 recite, "the method of claim 1, wherein the forming a thin film transistor comprises, forming a gate electrode on the first substrate; insulating layer over the first substrate; depositing a gate forming a semiconductor layer on the gate over the first substrate; depositing a gate forming a semiconductor layer on the gate insulating layer; and forming a source electrode and a drain electrode on the semiconductor layer. " it is not understood from the above recitation how the first recited step "forming a gate electrode on the first substrate" is related to the other steps mentioned e.g. depositing a gate forming a semiconductor layer. Further it is not understood what Applicants' intend to include/exclude by the recitation, "depositing a gate forming a semiconductor layer on the gate insulating layer".

Again Applicants have *absolutely no idea* what the Examiner is attempting to communicate as being the actual language recited by claims 6 and 14 that are cited as the grounds for rejecting claims 6 and 14 under 35 U.S.C. § 112, second paragraph. For example, Applicants respectfully assert that claims 6 and 14 do not recite *anything* that includes "depositing a gate forming a semiconductor layer on the gate insulating layer." Thus, Applicants have not

amended claims 6 and 14 since the reasons set forth by the Examiner are completely incomprehensible, unintelligible, and perplexing to understand.

In summary, Applicants would greatly appreciate a more thorough explanation as to the grounds for rejecting any claims under 35 U.S.C. § 112, second paragraph, if any of the outstanding rejections under 35 U.S.C. § 112, second paragraph, are maintained. Furthermore, Applicants most respectfully request that the next Office Action issued by the Examiner be reviewed by either the Examiner's SPE or by another Primary Examiner competent with domestic legal writing practices in order to prevent any unnecessary estoppel on Applicants' part by either addressing issues that do not exist because of a lack of clear explanation of the grounds of rejection by the Examiner or by amending the claims unnecessarily in order to overcome rejections that are not adequately and clearly explained by the Examiner.

Furthermore, Applicants reserve the right to have the record of the present application expunged due to the lack of clear explanation of the grounds of rejection by the Examiner, as abundantly evidenced and detailed above. Specifically, Applicants assert that any comments and amendments unnecessarily made as a result of the Examiner's inability to provide a clear explanation of the grounds of rejection during prosecution of the present application will be petitioned to the Commissioner for removal from the prosecution history of Applicants' present application.

All Claims Define Allowable Subject Matter

Claims 1-17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Rho et al. (US 6,597,415) in view of Kim (US 6,862,052). Applicants respectfully traverse this rejection on grounds that the applied references, whether taken singly or combined, fail to teach or suggest the combination of features recited by independent claims 1 and 10, and hence dependent claims 2-9 and 11-17.

First, Applicants respectfully assert that Rho et al. fails to teach or suggest anything with regard to a "forming a thin film transistor in a pixel region and a pad on an edge region of a first substrate," as required by independent claim 1. Specifically, Applicants assert that Rho et al. discloses nothing with regard to "forming a thin film transistor in a pixel region (Rho figure 8 #50, col. 4 lines 64-65, Rho figure 2 # 21 –pixel, col. 5 lines34-36) and a pad on an edge region of a first substrate," as alleged by the Office Action. Applicants can only presume that the Examiner is interpreting Applicants' claimed "pad" as the capacitor structure shown as the trench 120 in FIG. 8 of Rho et al. If Applicants' presumption is correct, then Applicants assert that trench 120 in FIG. 8 of Rho et al. is not any type of "pad," as claimed and disclosed by Applicants or as one of ordinary skill in the art would recognize as a pad structure. Conversely, if Applicants' presumption is not correct, then Applicants traverse the rejection until a more clear explanation can be provided by the Examiner as to what exact structure of Rho et al. is alleged as anticipating Applicants' claimed "pad." Thus, Applicants respectfully assert that the Office Action fails to establish a *prima facie* case of obviousness with regard to at least independent claim 1, and hence dependent claims 2-9.

Applicants respectfully direct the Examiner's attention to Kim, where there are shown multiple examples of what "pads" are, as well as their functions within an LCD device.

Second, Applicants respectfully assert that Rho et al. fails to teach or suggest anything with regard to "removing the organic passivation layer in the edge region using a diffraction mask to expose a portion of the pad," as required by independent claim 1. Specifically, Applicants assert that Rho et al. discloses nothing with regard to "(Rho col. 7 lines 15-20) and removing the organic passivation layer in the edge region using a diffraction mask to expose a portion of the pad, (Rho figure 5 and col. 6 lines 1-5, col. 3 lines 37-40)," as alleged by the Office Action.

As a first example, Rho et al. (at col. 7, lines 15-20) merely discloses:

> As shown in FIG. 8, the silicon nitride (SiNx) layer 41 is formed only under the a-Si layer 50. If the SiNx layer is formed all over the flowable organic insulating layer, the triple layer of the flowable organic insulating layer, the SiNx layer and the passivation layer is formed at the gate pad region. Because the etch rate of the organic insulating layer and that of the SiNx are different, it may not be easy to form contact holes in the gate pad region.

Accordingly, Applicants respectfully assert that nothing in the passage cited in the Office Action discloses anything with regard to "removing the organic passivation layer in the edge region using a diffraction mask to expose a portion of the pad," as required by independent claim 1.

As a second example, Rho et al. (at col. 3, lines 37-40) merely discloses:

> The process of patterning the etch stopper layer includes the steps of exposing the organic layer to light from the rear side of the substrate, exposing the organic layer to light from the front side of the substrate using an etch stopper mask, developing the organic layer and annealing the organic layer.

In addition, Rho et al. (at col. 6, lines 1-5) merely discloses:

> According to the second embodiment of the present invention, as shown in FIG. 4, the portion of the passivation layer 100 on the storage capacitor electrode 30 is removed, and the portion of the gate insulating layer 40 on the storage capacitor electrode 30 is thinner than the other portions.

As explicitly evidenced above, Applicants respectfully assert that Rho et al. discloses nothing with regard to "(Rho col. 7 lines 15-20) and removing the organic passivation layer in the edge region using a diffraction mask to expose a portion of the pad, (Rho figure 5 and col. 6 lines 1-5, col. 3 lines 37-40)," as alleged by the Office Action. Accordingly, Applicants respectfully assert that the Office Action fails to recognize that Rho et al. is more deficient than admitted by the Examiner. Specifically, Rho et al. is completely silent with regard to "removing the organic passivation layer in the edge region using a diffraction mask to expose a portion of the pad," as required by independent claim 1. Thus, Applicants respectfully assert that the Office Action fails to establish a *prima facie* case of obviousness with regard to at least independent claim 1, and hence dependent claims 2-9.

Third, Applicants respectfully assert that Rho et al. is completely silent regarding use of a diffraction mask. Applicants assert that, based upon the passages cited by the Office Action, Rho et al. fails to teach or suggest the use of a diffraction mask during fabrication of the TFT substrate. Moreover, Applicants assert that Rho et al. fails to teach or suggest anything with regard to removing an organic passivation layer in an edge region to a portion of a pad. Thus, Applicants respectfully assert that the Office Action fails to establish a *prima facie* case of obviousness with regard to at least independent claim 1, and hence dependent claims 2-9.

The Office Action apparently relies upon Kim to remedy the perceived deficiencies of Rho et al. Specifically, the Office Action relies upon Kim to allegedly teach using a diffraction mask "to provide data lines at opposite sides of the pixel areas so that variation in the pixel voltage due to the parasitic capacitance between partitioned areas with different degree of misalignment is reduced and pixel voltage variation between the two partitioned areas is reduced to prevent non-uniformity in the brightness." Accordingly, the Office Action concludes that:

> Therefore it would have been obvious to use Kim's diffraction mask having a slit portion including slits having a plurality of different widths In Rho's masks, the motivation to include the above is "to provide data lines at opposite sides of the pixel areas so that variation in the pixel voltage due to the parasitic capacitance between partitioned areas with different degree of misalignment is reduced and pixel voltage variation between the two partitioned areas is reduced to prevent non-uniformity in the brightness." (Kim col. 3 lines 33-36 an 40-43).

Applicants further traverse the rejection for at least the following reasons.

First, Applicants respectfully assert that the motivation alleged in the Office Action fails to establish any logical reasoning why one of ordinary skill in the art would combine the teachings of Kim with Rho et al. Specifically, Applicants respectfully assert that Kim (at col. 3, lines 36-43) merely discloses:

> In the present invention, the data line is provided at opposite sides of the pixel area so that variation in the pixel voltage due to the parasitic capacitance between the partitioned areas with different degree of misalignment is reduced. In addition, two TFTs are provided in each pixel area so that the parasitic capacitance between the gate and the drain electrodes in two respective partitioned areas with left-biased and right-biased misalignment is kept to be constant. In this way, the pixel voltage variation between the two partitioned areas is reduced to prevent non-uniformity in the brightness.

In other words, Kim merely teaches forming a data line having a unique structure in order to reduce pixel voltage variations between two partitioned areas and prevent non-uniformity in the brightness of the LCD device. Accordingly, Applicants respectfully assert that Kim teaches, as shown in FIGs. 28 and 29, and disclosed from col. 17, line 33 to col. 18, line 9, using a diffraction mask 100 having a position-dependent light transmittance in order to form the photoresist patterns 112 and 114. Applicants respectfully assert that the diffraction mask taught by Kim is explicitly used to form a photoresist pattern, wherein the photoresist pattern and underlying layers are subsequently etched to form specific data line structures. Thus, Applicants respectfully assert that Kim fails to teach or suggest the explicit use of a diffraction mask "to provide data lines at opposite sides of the pixel areas so that variation in the pixel voltage due to the parasitic capacitance between partitioned areas with different degree of misalignment is reduced and pixel voltage variation between the two partitioned areas is reduced to prevent non-uniformity in the brightness," as alleged by the Office Action as motivation with which to modify Rho et al. Therefore, Applicants respectfully assert that the Office Action fails to establish a *prima facie* case of obviousness with regard to at least independent claim 1, and hence dependent claims 2-9.

Second, Applicants respectfully assert that Kim explicitly teaches (col. 18, lines 42-47) performing the photolithographic process prior to deposition of a passivation layer 70. Accordingly, Applicants respectfully assert that the processes taught by Kim are directly contrary to the process disclosed by Rho et al. Specifically, Applicants assert that Rho et al. teaches (col. 9, lines 16-28) that the organic insulating material may be photo definable such that "only the steps of exposing using a mask and developing the passivation layer 100 may be performed." Applicants assert that use of the diffraction mask and associated photolithographic processes explicitly taught by Kim is unnecessary by the explicit disclosure of Rho et al. Thus, one of ordinary skill in the art would not look to Kim to remedy the admitted deficiencies of Rho et al. Therefore, Applicants respectfully assert that the Office Action fails to establish a *prima facie* case of obviousness with regard to at least independent claim 1, and hence dependent claims 2-9.

With regard to the rejection of claim 3, Applicants respectfully traverse the Examiner's explanation for the following reasons. Applicants respectfully assert that Rho et al. discloses *absolutely nothing* with regard to the use of a photoresist for removing the passivation layer. The passages cited by the Examiner say *absolutely nothing* with regard to use of a photoresist on the passivation layer. In addition, as detailed above, Applicants assert that use of the diffraction mask and associated photolithographic processes explicitly taught by Kim is unnecessary by the explicit disclosure of Rho et al. Thus, one of ordinary skill in the art would not look to Kim to remedy the admitted deficiencies of Rho et al. Therefore, Applicants respectfully assert that the Office Action fails to establish a *prima facie* case of obviousness with regard to at least claim 3, and hence dependent claims 4 and 5.

With regard to the rejection of claim 7, Applicants respectfully traverse the Examiner's explanation for the following reasons. Applicants respectfully assert that Rho et al. discloses *absolutely nothing* with regard to forming a metal layer on an exposed portion of a pad. As detailed above, Rho et al. is completely silent with regard to formation of any "pad." Specifically, as presumed above, Applicants respectfully assert that the storage capacitor electrode 30 is not a "pad," and that the pixel electrode 140 is not formed on any exposed part of the storage capacitor electrode 30. Thus, Applicants respectfully assert that the Office Action fails to establish a *prima facie* case of obviousness with regard to at least claim 7, and hence dependent claim 8.

With regard to the rejection of claim 9, Applicants respectfully traverse the Examiner's explanation for the following reasons. Applicants respectfully assert that Rho et al. discloses *absolutely nothing* with regard to "forming a sealant on the edge region of the first substrate and attaching the first and second substrates to each other" and "forming a liquid crystal layer between the first and second substrates," as required by claim 9. The Office Action alleges that:

> (Rho fig. 13, col. 8 lines 10-22) forming a sealant on the edge region of the first substrate and attaching the first and second substrates to each other; and forming a liquid crystal between the first and second substrates. (Rho fig. 13, Kim figures 1, 2 col. 6 lines 55-60).

However, as reproduced below, none of the passages cited by the Examiner remotely teach or suggest the features recited by claim 9. Rho et al. discloses (col. 18, lines 10-22) that:

> FIG. 13 illustrates a cross-sectional view of a liquid crystal display cell according to an embodiment of the present invention. The TFT substrate and the color filter substrate are arranged such that the color filter 160 corresponds to the pixel electrode 140. To keep up the cell gap between the TFT substrate and the color filter substrate, a column shaped spacer 190 is formed on the color filter substrate. The spacer 190 is made of a photo definable organic material, and positioned corresponding to the TFT on the TFT substrate. The spacer 190 does not affect the characteristics of the TFT since there are planarized layers 100 and 110 having a sufficient thickness on the channel of the TFT.

In addition, Kim discloses (col. 6, lines 51-59) that:

> The pixel electrodes 80 are connected to the first and the second drain electrodes 631 and 632 through the contact holes 721 and 722 to receive image signals. The subsidiary gate and data pads 83 and 84 are connected to the gate and the data pads 23 and 64 through the contact holes 73 and 74, respectively. The subsidiary gate and data pads 83 and 84 make a function of reinforcing the adhesiveness between the pads 23 and 64 and external circuits as well as protecting the pads 23 and 64.

As clearly shown above, the passages of Rho et al. and Kim cited by the Office Action say *absolutely nothing* with regard to the steps recited by claim 9. Furthermore, FIG. 13 of Rho et al. and FIGs. 1 and 2 of Kim teach or suggest *absolutely nothing* with regard to the steps recited by claim 9. Thus, Applicants respectfully assert that the Office Action fails to establish a *prima facie* case of obviousness with regard to at least claim 9.

With regard to the brief explanation provided by the Examiner as to the reasoning for rejecting independent claim 10, Applicants respectfully assert that the arguments set forth above are equally applicable to the limited grounds of rejection of independent claim 10, and hence dependent claims 11-17.

With regard to the brief explanation provided by the Examiner as to the reasoning for rejecting claims 15 and 17, Applicants respectfully assert that the arguments set forth above are equally applicable to the limited grounds of rejection of claims 15 and 17, and hence dependent claim 16.

For at least the above reasons, Applicants respectfully assert that claims 1-17 are neither taught nor suggested by the applied prior art references, whether taken alone or in combination. Thus, Applicants respectfully assert that the rejection under 35 U.S.C. § 103(a) should be withdrawn because the above-discussed novel combination of features are neither taught nor suggested by any of the applied references.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully request the reconsideration and the timely allowance of the pending claims. Should the Examiner believe that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants' undersigned representative to expedite prosecution.

If there are any other fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-0310. If a fee is required for an extension of

time under 37 C.F.R. § 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

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